

Name

Key

Date

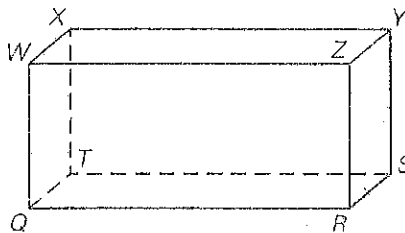
LESSON  
31

## Practice A

For use with pages 146-152

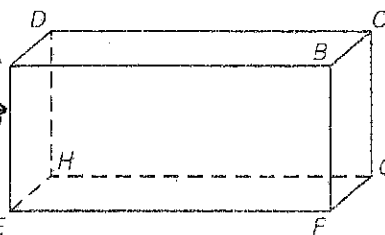
Think of each segment in the diagram as part of a line. Complete the statement with *parallel*, *skew*, or *perpendicular*.

- $\overline{WZ}$  and  $\overline{XY}$  are parallel
- $\overline{WZ}$  and  $\overline{QT}$  are perpendicular
- $\overline{SY}$  and  $\overline{WX}$  are skew
- Plane  $WQR$  and plane  $SYT$  are parallel
- Plane  $ROT$  and plane  $WQR$  are perpendicular



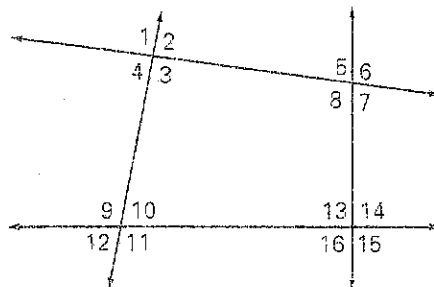
Think of each segment in the diagram as part of a line. Which line(s) or plane(s) appear to fit the description?

- Line(s) parallel to  $\overline{AB}$ :  $\overleftrightarrow{DC}$ ,  $\overleftrightarrow{HG}$ ,  $\overleftrightarrow{EF}$
- Line(s) perpendicular to  $\overline{BF}$ :  $\overleftrightarrow{BC}$ ,  $\overleftrightarrow{AB}$ ,  $\overleftrightarrow{CF}$ ,  $\overleftrightarrow{EF}$
- Line(s) skew to  $\overline{CD}$  and containing point E:  $\overleftrightarrow{EA}$ ,  $\overleftrightarrow{EH}$
- Plane(s) perpendicular to plane  $ABF$ : plane  $ABC$ , plane  $ADE$ , plane  $BCF$ , plane  $EFG$
- Plane(s) parallel to plane  $ABC$ : plane  $EFG$



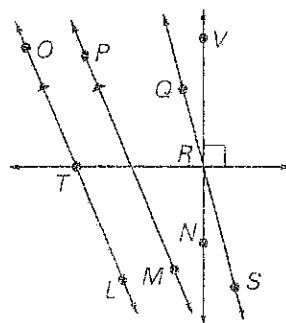
Classify the angle pair as *corresponding*, *alternate interior*, *alternate exterior*, or *consecutive interior* angles.

- $\angle 3$  and  $\angle 9$  alt. int
- $\angle 5$  and  $\angle 13$  corresponding
- $\angle 4$  and  $\angle 10$  alt. int
- $\angle 5$  and  $\angle 15$  alt. ext.
- $\angle 7$  and  $\angle 14$  consecutive int
- $\angle 1$  and  $\angle 11$  alt. ext.



In Exercises 17-20, use the markings in the diagram.

- Name a pair of parallel lines:  $\overleftrightarrow{OP} \parallel \overleftrightarrow{MN}$
- Name a pair of perpendicular lines:  $\overleftrightarrow{VR} \perp \overleftrightarrow{TR}$
- Is  $\overleftrightarrow{QS} \parallel \overleftrightarrow{TR}$ ? NO
- Is  $\overleftrightarrow{VN} \perp \overleftrightarrow{TR}$ ? yes



LESSON  
3.2**Practice C** *continued*  
For use with pages 153-160Find the values of  $x$  and  $y$ .

$5x + 15 = 110$

$5x = 95$

$x = 19$

$y - 28 + 110 = 180$

$y - 28 = 70$

$y = 98$

$y - 8 + 124 = 180$

$y = 64$

$2x + 56 + 60 = 180$

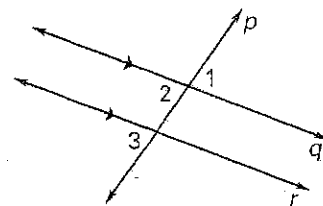
$2x = 64$

$x = 32$

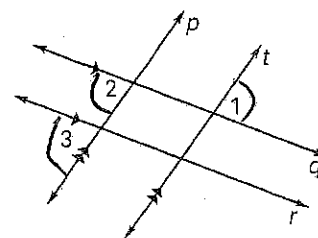
In Exercises 19 and 20, complete the two-column proof.

19. GIVEN:  $q \parallel r$ PROVE:  $\angle 1 \cong \angle 3$ 

Statements	Reasons
1. $q \parallel r$	1. _____ ?
2. $\angle 1 \cong \angle 2$	2. _____ ?
3. $\angle 2 \cong \angle 3$	3. _____ ?
4. $\angle 1 \cong \angle 3$	4. _____ ?

20. GIVEN:  $q \parallel r, p \parallel t$ PROVE:  $\angle 1 \cong \angle 3$ 

Statements	Reasons
1. $p \parallel t$	1. <u>Given</u> ?
2. $\angle 1 \cong \angle 2$	2. <u>Alt Ext 2s Thm</u>
3. $q \parallel r$	3. <u>Given</u> ?
4. $\angle 2 \cong \angle 3$	4. <u>Corr 4s Post</u>
5. $\angle 1 \cong \angle 3$	5. <u>Transitive</u>



$4y - 16 + 68 = 180$

$4y = 128$

$y = 32$

14.

$$\begin{aligned} (4y - 16)^\circ &= 68^\circ \\ 4y - 16 &= 68 \\ 4y &= 84 \\ y &= 21 \end{aligned}$$

$2x - 24 + 68 = 180$

$2x = 136$

$x = 68$

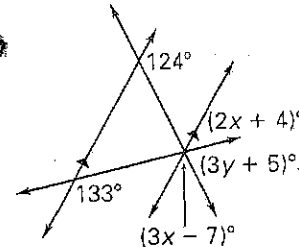
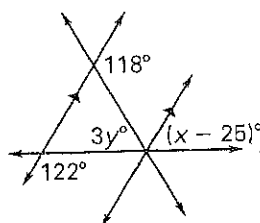
15.

$$\begin{aligned} (3y + 31)^\circ &= 136^\circ \\ 3y + 31 &= 136 \\ 3y &= 105 \\ y &= 35 \end{aligned}$$

$6x + 8 = 44$

$6x = 36$

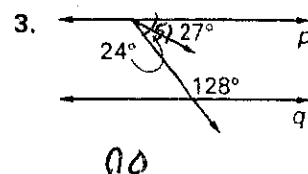
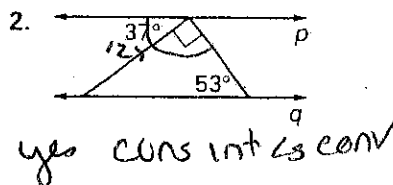
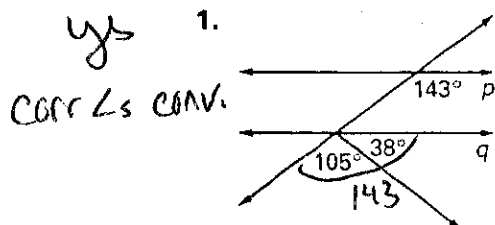
$x = 6$



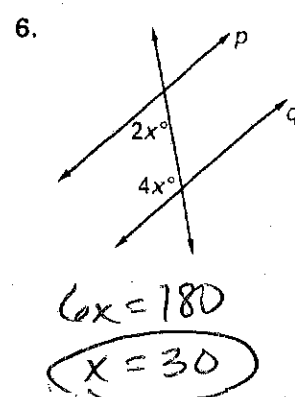
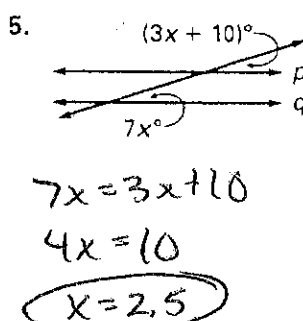
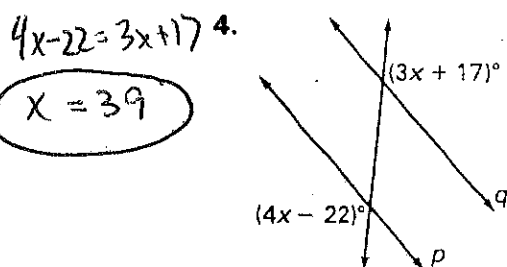
# Practice C

For use with pages 150-156

Is it possible to prove that lines  $p$  and  $q$  are parallel? If so, explain how.



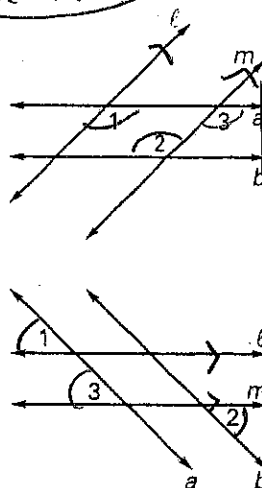
Find the value of  $x$  that makes  $p \parallel q$ .



7. Write a two-column proof.

Given:  $\ell \parallel m$ ,  $\angle 1 \cong \angle 2$

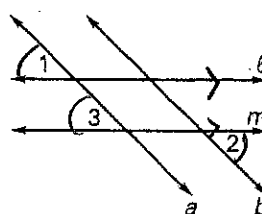
Prove:  $a \parallel b$



8. Write a two-column proof.

Given:  $\ell \parallel m$ ,  $\angle 1 \cong \angle 2$

Prove:  $a \parallel b$



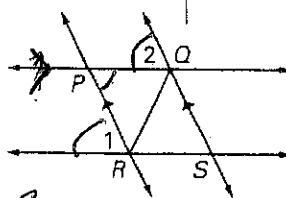
9. a. Explain why  $\angle 1$  and  $\angle 2$  are not corresponding angles with respect to any pair of lines and transversal.

b. Write a two-column proof.

GIVEN:  $\overleftrightarrow{PR} \parallel \overleftrightarrow{QS}$ ,  $\angle 1 \cong \angle 2$

PROVE:  $\overleftrightarrow{PQ} \parallel \overleftrightarrow{RS}$

(Hint: Use  $\angle QPR$  or  $\angle QSR$ .)



S	R
① ~	① Given
② $\angle 2 \cong \angle QPR$	② Alt Int $\angle$ s Thm
③ $\angle 1 \cong \angle QPR$	③ <del>Subst</del> Transitive
④ $PQ \parallel RS$	④ Alt Int $\angle$ Conv

Proof<sup>3</sup>

- ⑦
- |                             |                           |                            |
|-----------------------------|---------------------------|----------------------------|
| ① $\ell \parallel m$        | $\angle 1 \cong \angle 2$ | ① Given                    |
| ② $\angle 2 \cong \angle 1$ | *                         | ② Symmetric                |
| ③ $\angle 1 \cong \angle 3$ |                           | ③ Corr $\angle$ s Post     |
| ④ $\angle 2 \cong \angle 3$ |                           | ④ transitive               |
| ⑤ a//b                      |                           | ⑤ Alt. int $\angle$ s Conv |

\* Note I wrote this creatively so  
I could use transitive

- ⑧
- |                             |                           |                            |
|-----------------------------|---------------------------|----------------------------|
| ① $\ell \parallel m$        | $\angle 1 \cong \angle 2$ | ① Given                    |
| ② $\angle 2 \cong \angle 1$ | *                         | ② symmetric                |
| ③ $\angle 1 \cong \angle 3$ |                           | ③ Corr $\angle$ s post     |
| ④ $\angle 2 \cong \angle 3$ |                           | ④ transitive               |
| ⑤ a//b                      |                           | ⑤ Alt. ext $\angle$ s conv |

- ⑨
- |   |                           |                           |
|---|---------------------------|---------------------------|
| ① $\overline{PR} \parallel \overline{QS}$ | $\angle 1 \cong \angle 2$ | ① Given                   |
| ② $\angle 2 \cong \angle QPR$             |                           | ② Alt int $\angle$ s Thm  |
| ③ $\angle 1 \cong \angle QPR$             |                           | ③ transitive              |
| ④ $\overline{PQ} \parallel \overline{RS}$ |                           | ④ Alt int $\angle$ s Conv |